

Patent Claims

1. A one-way valve for discharging a flowable material from a container of a reducible volume, comprising a cap which is seated on the container neck and includes an exit opening for the material,

characterized by

a valve seat (1) which is arranged in the container neck (4) and comprises a base body (7, 8, 9) which rests on the inner wall of the container neck (4) and contains at least one through hole (10), and a projection (11) which extends in axial direction of the container neck (4) towards the exit opening (27), and
an elastic seal (2) which comprises an annular section (13) which covers the at least one through hole (10), and a sleeve-like section (14) which surrounds the projection (11) at a radial distance with the exception of its end section (17) which in the closed state of the one-way valve rests in the exit opening (27) on the end section (12) of the projection (11).

2. The one-way valve according to claim 1,

characterized in

that a sterilization means (3) is arranged in the flow path of the flowable material.

3. The one-way valve according to claim 1 or 2,

characterized in

that the base body contains a plurality of through holes (10) radially outside of the projection (11).

4. The one-way valve according to any one of claims 1 to 3,

characterized in

that the base body comprises a planar base plate (7) which contains the at least one through hole (10), and a circumferential wall (8) which rests on the inner wall of the

container neck (4) and which with an externally surrounding shoulder (9) rests on the edge of the container neck (4).

5. The one-way valve according to any one of claims 1 to 4, characterized in that the projection (11) of the valve seat (1) has a circular cylindrical shape with a tapering, preferably conically beveled, end section (12).
6. The one-way valve according to any one of claims 1 to 4, characterized in that the projection (11) of the valve seat (1) has an arcuate contour in longitudinal section.
7. The one-way valve according to any one of claims 1 to 6, characterized in that the upper edge (19) of the projection (11) is arranged inside the container opening (27).
8. The one-way valve according to any one of claims 1 to 7, characterized in that the annular section (13) of the seal (2) has a planar shape and is held by an annular projection (26) of the cap (6) radially outside of the at least one through hole (10) in contact with the base plate (7) of the valve seat (1).
9. The one-way valve according to any one of claims 1 to 8, characterized in that the sleeve-like section (14) of the seal (2) in longitudinal section, starting from the annular section (13), is configured to be first cylindrical, then conical and then cylindrical again on its outside.

10. The one-way valve according to any one of claims 1 to 8,
characterized in
that the sleeve-like section (14) in longitudinal section has an arcuate contour.

11. The one-way valve according to any one of claims 1 to 10,
characterized in
that the end section (17) of the sleeve-like section (14) has an inner contour
corresponding to the circumferential surface of the end section (12) of the projection
(11) and, moreover, rests with its outer wall on the narrow, which is rounded in cross
section, of the wall of the container opening, so that the annular gap between the
end section (12) of the projection (11) of the valve seat (1) and the inner wall of the
container opening (27) is tightly closed in the closed state of the one-way valve.

12. The one-way valve according to any one of claims 1 to 11,
characterized in
that the upper edge (18) of the sleeve-like section (14) of the seal (2) is in alignment
with the upper side (28) of the cap (6) in the closed state of the valve.

13. The one-way valve according to any one of claims 1 to 12,
characterized in
that the sterilization means is a spiral-like sterilization element (3) which surrounds
the projection (11).

14. The one-way valve according to any one of claims 1 to 13,
characterized in
that the sterilization element (3) in the closed state of the valve is, on the upper end
portion, in contact with both the projection (11) and the sleeve-like section (14) of the
seal (2).

15. The one-way valve according to any one of claims 1 to 14,

characterized in

that the sterilization element consists of silver or of another metal having an oligodynamic action, or of a substance having a bactericidal action, or is coated therewith.

16. The one-way valve according to any one of claims 1 to 12,

characterized in

that the sterilization means is formed by coating at least parts of the valve seat and/or the seal with metals having an oligodynamic action or with substances having a bactericidal action.